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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants: Bretl, *et al.*	I hereby certify that this paper is being deposited with the United States Postal Service as first class mail, postage pre-paid, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this date:
Serial No.: 09/330,769	
Filed: June 11, 1999	
For: **MPEG ON SCREEN DISPLAY CODER FOR DTV INTERFACES**	
Group Art Unit: 2613	May 22, 2006 (Date)
Examiner: A. Rao	
Attorney Docket No.: 7081	Trevor B. Jolke Reg. No. 25,542 Attorney for Appellants
Confirmation No.: 9810	

APPELLANT'S BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to the provisions of 37 CFR §41.37, Appellants submit the following brief.

1. Real Party in Interest

The real party in interest is Zenith Electronics Corporation of Lincolnshire, IL.

2. Related Appeals and Interferences

There are no other appeals or interferences known to Appellants, Appellants' legal representatives or assignees which will directly affect or be affected by or have a bearing on the Board's decision in the pending appeal.

3. Status of Claims

Claims 1-88 are pending in the application. Claims 18, 19, 30, 31, 39, 48, 58, 66, and 76 are objected to as being dependent upon rejected claims but are otherwise considered to be allowable. Claims 2-10, 12-15, 20-27, 33-36, 38, 40, 41, 43-45, 47, 49-55, 63, 65-69, 71-73, and 77-80 are withdrawn from consideration as being directed to a non-elected species. Claims 1, 11, 16, 17, 28, 29, 32, 37, 42, 46, 47, 56, 57, 59-62, 64, 70, 74, 75, and 81-88 are rejected and are appealed.

4. Status of Amendments

All amendments have been entered.

5. Summary of Claimed Subject Matter

As disclosed on page 4, line 17 through page 5, line 18 of the present application, an MPEG on-screen display coder 10 processes an input MPEG-2 transport stream containing transport packets for a selected MPEG encoded video program. This selected MPEG encoded video program may be multiplexed with non-selected programs. The input MPEG transport stream is processed by the MPEG on-screen display coder 10 so that an on-screen display

appears on the screen of a digital television that is used to view the video program.

When the on-screen display is not selected by a user, the output of the MPEG on-screen display coder 10 comprises the original intact transport stream. However, when the on-screen display is selected by the user, the output of the MPEG on-screen display coder 10 comprises a transport stream in which transport packets containing the selected MPEG encoded video have been deleted and replaced by packets containing locally generated MPEG video.

As disclosed on page 27, line 6 through page 32, line 18 of the present application, the MPEG on-screen display coder 10 is shown as an MPEG on-screen display coder 110. The transport stream is fed to a demultiplexer 112 of the MPEG on-screen display coder 110. The demultiplexer 112 extracts only the transport packets for a selected video program and feeds these packets to an encoder 114.

The transport stream is also fed to a delay buffer 116 which imparts a constant delay time to the transport stream that is equal to the processing time of the encoder 114. The delay buffer 116 outputs the transport stream to an input A of a multiplexer 118. The delay buffer 116 also sends a control signal to a multiplexer override input of the multiplexer 118 in order to indicate whether each transport packet is a video packet of the selected program.

The encoder 114 sends a video I frame marker to an on-screen display turn on/off sync block 120. The on-screen display turn on/off sync block 120 also receives a signal requesting a turn on or off of the on-screen

display function. When an on-screen display turn on is requested, the on-screen display turn on/off sync block 120 waits for the video I frame marker to become active, at which time the on-screen display turn on/off sync block 120 signals the multiplexer 118 to switch to an input B. When an on-screen display turn off is requested, the on-screen display turn on/off sync block 120 waits for the video I frame marker to become active, at which time the on-screen display turn on/off sync block 120 signals the multiplexer 118 to switch to the input A.

The encoder 114 includes an MPEG encode engine 122 that receives I frames decoded by a parser 124 and outputs locally encoded I and P frames. Within the MPEG encode engine 122, the incoming decoded original I frames are overlaid with the selected graphics. The I frame is then re-encoded by the MPEG encode engine 122 with the same quantization, VLC table, and DCT coefficient selection as the original I frame. In this way, there is no degradation of the original video, and the number of bits in the overlaid I frame matches the number of bits in the original I frame. The incoming P and B frames are deleted and are replaced by locally generated P frames that are perfectly predicted from the locally generated previous frame with residuals and motion vectors set equal to zero. All generated P frames are less than or equal in size to the corresponding deleted original frames.

The encoder 114 further includes a PES packetizer 126, a transport packetizer 128, and an on-screen display multiplexer 130 that operate to packetize frames, divide the packets into a series of transport

packets, multiplex the transport packets with null packets from a null packet source, and feed the multiplexed packets to the input B of the multiplexer 118.

As disclosed on page 26, lines 14-19 of the present invention, if the number of these locally generated on-screen transport packets in the frame is less than the number of packets in the deleted original frame, the multiplexer makes up the difference by selecting these null packets. Additionally or alternatively, Program Map Table (PMT) packets can be used for this purpose.

As disclosed on page 22, lines 23-24 of the present invention, the locally generated (encoded) video is effectively slaved to the timing of the original deleted video.

6. Grounds of Rejection to be Reviewed on Appeal

(a) Claims 1, 11, 32, 37, 42, and 88 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,894,320 (hereinafter, "the Vancelette '320 patent").

(b) Claims 16, 17, 28, 29, 46, 47, 56, and 57 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Vancelette '320 patent.

(c) Claims 59-62, 64, 70, and 81-87 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Vancelette '320 patent in view of U.S. Patent No. 5,650,825 (hereinafter, "the Naimpally '825 patent").

(d) Claims 74 and 75 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

7. Argument

Ground (a)

The Vancelette '320 patent shows in Figure 1 video cameras 12, 14 and 16 providing video and audio signals on corresponding channels A, B, and C to a transmitter 20. A processing function 22 of the transmitter 20 digitizes and compresses the video and audio signals of channels A, B, and C as a packetized data stream conforming to the MPEG-2 or DigiCipher® II standards.

A multiplexer/encryptor 26 combines the packetized data stream with control messages from an operator interface 28. The control messages may include software code download packets that include computer software to be downloaded to a viewer's set-top terminal 70. The computer software controls the operation of the terminal 70, including an associated user interface 535 and OSD processor 545.

The packetized data stream and control messages are encrypted. The encrypted packetized data stream and control messages are provided to a forward error correction (FEC) encoder 30 and then to a QAM modulator 32 for transmission as a transmitted signal 210 to a cable headend 50.

At the cable headend 50 shown in Figure 1, a multiplexer 230 combines local programming 220 with the transmitted signal 210 from the transmitter 20 under control of an operator interface 240 and a memory 250. The operator interface 240 provides channel mapping data, on-screen display graphics data, and terminal address

data. The channel mapping data, OSD data, and terminal address data are stored in the memory 250.

As shown in Figure 5, the set-top terminal 70 receives the packetized data stream at an input 510 and provides the packetized data stream to an FEC decoder 520 and a demodulator 525. The forward error corrected and demodulated packetized data stream is provided to a demultiplexer and decryptor 530, where the encrypted data packets are decrypted and separated into two data paths. In one path, the control data packets contained in the packetized data stream are provided to a microprocessor 540. In the other path, the video and audio packets contained in the packetized data stream are provided to a processing and decompression block 555.

The software code in the code download packets of the packetized data stream is executed by the microprocessor 540 and the OSD graphics processor 545 to provide alternative audio and video capabilities. For instance, "code 1" packets 410 may include software code related to on-screen graphics. The microprocessor 540 also receives a signal from the user interface 535, which is responsive to viewer commands. In response to OSD data received via the packetized data stream and the code download packets, the OSD processor 545 creates a graphical display that informs the viewer of the various available audio and video options. The user interface 535 receives the viewer's commands and provides them to the microprocessor 540 and a memory 560.

If the viewer has selected a primary channel to view, the microprocessor 540 determines which audio and video packets in the received data stream correspond to the selected primary channel, and the appropriate video

and audio packets are processed by the block 555. Additionally, OSD data from the OSD processor 545 is combined with the video signal by the block 555 to form a composite video signal to display the OSD graphics and the video data.

As shown in Figure 6, software code is downloaded to or installed on the terminal 70 and stored in memory at 610. At 620, channel mapping and other control data are received via the packetized data stream and are stored in memory. At 630, the user selects a primary channel. At 640, the audio and video packets of the selected primary channel are processed and displayed. At 650, the user invokes the OSD graphic display. At 660, the user selects desired alternative audio/video signals. At 670, the microprocessor 540 reads the memory to obtain and modify the channel mapping and other control data corresponding to the selected audio and video signals. The microprocessor 540 then issues a selection command to the decompression and processing function 555 so that the corresponding audio and video packets are processed and displayed along with the OSD graphics.

Independent claim 1 of the present application requires an MPEG encoder that encodes frames with an on-screen display in response to an on-screen display instruction.

The Vancelette '320 patent does not disclose that frames are encoded with the on-screen display by an MPEG encoder. The Vancelette '320 patent does disclose at column 10, lines 32-38 that OSD data from an OSD processor 545 is combined with a video signal by a function 555 to form a composite video signal that

includes a split screen or overlay format with part of the screen displaying OSD graphics and part of the screen displaying the video.

However, there is no mention here that frames are MPEG encoded with an on-screen display as required by independent claim 1.

The Vancelette '320 patent also discloses in column 6, lines 1-25 (i) that the video cameras 12, 14, and 16 provide video and audio signals on corresponding channels A, B, and C, (ii) that the video and audio signals are digitized, compressed, and packetized in a data stream so as to conform to the MPEG-2 or DigiCipher® standards, and (iii) that the resulting stream is combined with control messages from an operator interface 28 at the multiplexer/encryptor 26.

As can be seen, there is no mention here of an MPEG encoder that encodes frames with an on-screen display as required by independent claim 1.

Column 7, lines 40-67 of the Vancelette '320 patent merely states (i) that the operator interface 240 in the cable headend 50 provides on-screen display graphics data, (ii) that the headend operator may insert control data via a multiplexer 230 grouping the audio and video signals of the packetized data stream and local programming together, and (iii) that the audio and video signals may be grouped according to a tiered marketing scheme.

Again, there is no mention here of an MPEG encoder that encodes frames with an on-screen display as required by independent claim 1.

Therefore, the Vancelette '320 patent does not anticipate independent claim 1.

The Examiner in the Final Rejection has made a number of assertions with respect to the Vancelette '320 patent. First, the Examiner asserts that the flow of information between the encoder, the mux, and the operator interface inherently includes inserting the OSD data into packetized control messages prior to encoding, pointing to column 6, lines 35-50 of the Vancelette '320 patent. Second, the Examiner asserts that channels A, B, and C are muxed together and that the user selects one of these channels by use of the user interface pointing to column 6, lines 15-25 of the Vancelette '320 patent. Third, the Examiner asserts that, if the OSD data were sent after encoding of the audio/video streams, the output of the transmitter could not be described as a packetized data stream pointing to column 6, lines 60-67 and column 7, lines 1-18 of the Vancelette '320 patent. Fourth, the Examiner asserts that OSD processor 545 provides OSD data to the decompression and processing block 555 which decompresses the OSD data, pointing to column 10, lines 20-40 of the Vancelette '320 patent and that, if the OSD were not encoded, there would be no need to decompress it. Fifth, the Examiner asserts that the Vancelette does disclose an MPEG encoder and that the overlay function is a sub-function of generating composite video.

As to the Examiner's first assertion, column 6, lines 35-50 of the Vancelette '320 patent does not disclose that OSD data to be included in an on-screen display is inserted into the packetized data stream. This portion of the Vancelette '320 patent merely discloses that software code is inserted into the packetized data stream and that this software code, in

part, controls operation of the OSD processor 545 in the terminal 70. Accordingly, the Vancelette '320 patent does not disclose that the transmitter 20 encodes frames with an on-screen display OSD as required by independent claim 1.

Moreover, even if the Vancelette '320 patent were to have disclosed here that an on-screen display is inserted into the packetized data stream, this insertion would be downstream of the MPEG encoding function 22 so that the MPEG encoding function 22 would not have MPEG encoded frames with the on-screen display. Indeed, there is no disclosure of an MPEG encoder in the transmitting apparatus 20 that encodes frame with an on-screen display.

As to the Examiner's second assertion, applicants would point out that this assertion is not relevant. The selection of a channels A, B, or C by the user does not result in any MPEG encoding of frames with an on-screen display.

As to the Examiner's third assertion, applicants again point out that there is no disclosure in the Vancelette '320 patent that the transmitter 20 encodes frame with an on-screen display. Column 6, lines 60-67 and column 7, lines 1-18 of the Vancelette '320 patent merely describe that the packetized data stream is forward error corrected, modulated, and transmitted to the cable headend 50 for combining with local programming and control data before being transmitted from the cable headend 50 to subscribers.

The Vancelette '320 patent does describe in column 7, line 27 through column 8, line 19 that the multiplexer 230 in the cable headend 50 provides channel

mapping data, on-screen display graphics data, and terminal address data. However, this portion of the Vancelette '320 patent does not disclose an MPEG encoder that encodes frames with an on the on-screen display.

Indeed, contrary to the third assertion by the Examiner, there is no requirement that the on-screen display data added by the multiplexer 230 be MPEG encoded. In fact, there is much data that is added to an MPEG transport stream that is not MPEG encoded.

As to the Examiner's fourth assertion, the Vancelette '320 patent does not disclose that OSD data is decompressed by the decompress and processing block 555. The Vancelette '320 patent, such as at column 10, lines 20-40, merely discloses that video and audio packets are processed by the decompress and processing block 555 and that OSD data is combined with the video signal by the decompress and processing block 555 to form a composite video signal. The OSD data does not need to be compressed for the decompress and processing block 555 to combine the OSD data with decompressed video data.

As to the Examiner's fifth assertion, the MPEG encoder to which the Examiner refers is in the function 22 of the transmitter 20. There is no description that an on-screen display passes through the function 22 and is thereby MPEG encoded by the transmitter 20. Moreover, there is no disclosure in the Vancelette '320 patent that OSD data to be included in an on-screen display is inserted in the transmitter 20. Only, software is added to video and audio by the transmitter 20. Furthermore, as discussed above, the overlay function in generating composite video does not require an MPEG encoder.

Accordingly, the Examiner's argument with respect to independent claim 1 is based on inaccurate assertions and must fail. The Vancelette '320 patent simply does not disclose encoding video frames with an on-screen display as required by independent claim 1.

Therefore, independent claim 1 is not anticipated by the Vancelette '320 patent.

Independent claim 32 requires an MPEG encoder that MPEG encodes frames of a selected program with an on-screen display and a multiplexer that replaces original frames with the encoded frames.

As discussed above, the Vancelette '320 patent does not disclose an MPEG encoder that encodes frames with an on-screen display. Therefore, the Vancelette '320 patent does not anticipate independent claim 32.

Also, the Vancelette '320 patent does not disclose a multiplexer that replaces original frames with these encoded frames. Therefore, for this reason also, the Vancelette '320 patent does not anticipate independent claim 32.

Independent claim 88 requires a demultiplexer that demultiplexes frames of a selected video program from frames of a non-selected program, and MPEG encoder that encodes the frames of the selected program with an on-screen display, and a multiplexer that multiplexes the encoded frames with the frames of the non-selected video program.

As discussed above, the Vancelette '320 patent does not disclose an MPEG encoder that encodes frames with an on-screen display. Therefore, the Vancelette '320 patent does not anticipate independent claim 88.

Moreover, the Vancelette '320 patent does not disclose that a multiplexer multiplexes video and on-screen displays on a frame basis. Therefore, for this reason also, the Vancelette '320 patent does not anticipate independent claim 88.

Because the Vancelette '320 patent does not anticipate independent claims 1 and 32, the Vancelette '320 patent does not anticipate dependent claims 11, 37, and 42.

In addition, dependent claim 37 recites that the encoded frames have a time base which is slaved to the original frames.

There is no disclosure in the Vancelette '320 patent of an MPEG encoder that produces encoded frames having a time base which is slaved to the original frames.

The Examiner points to column 8, lines 30-60 for an MPEG encoder that meets the limitations of dependent claim 37.

However, this portion of the Vancelette '320 patent mentions nothing about slaving the time base of the encoded frames to the time of the original frames as required by dependent claim 37.

The Examiner asserts in the Final rejection that time based multiplexing is based on the characteristics of the original frames or on the time base of the original live video feed.

The multiplexing to which the Examiner refers is packet based and not frame based.

Accordingly, the Examiner's argument is not pertinent to dependent claim 37.

Therefore, for this reason also, dependent claim 37 is not anticipated by the Vancelette '320 patent.

Ground (b)

As discussed above, the Vancelette '320 patent does not disclose MPEG encoding of frames with an on-screen display. Indeed, the Vancelette '320 patent does not suggest MPEG encoding of frames with an on-screen display to one of ordinary skill in the art. Therefore, claims 16, 17, 28, 29, 46, 47, 56, and 57 cannot be unpatentable over the Vancelette '320 patent.

Moreover, because the Vancelette '320 patent does not disclose or suggest MPEG encoding of frames with an on-screen display, the Vancelette '320 patent cannot suggest encoding I frames with the on-screen display as recited in dependent claims 16, 28, 46, and 56, or encoding subsequent P frames by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero as recited in dependent claims 17, 29, 47, and 57.

Indeed, the Vancelette '320 patent does not even mention I frames, P frames, or any kind of frames.

For this reason also, claims 16, 17, 28, 29, 46, 47, 56, and 57 cannot be unpatentable over the Vancelette '320 patent.

The Examiner asserts that, since the Examiner believes that there is an MPEG encoder disclosed in the Vancelette '320 patent that encode frames with an on-screen display, the encoding of I and P frames would have been obvious.

However, as discussed above, the Vancelette '320 patent does not disclose an MPEG encoder which encode frames with an on-screen display. Therefore, the Examiner's conclusion cannot follow.

Accordingly, dependent claims 16, 17, 28, 29, 46, 47, 56, and 57 cannot be unpatentable over the Vancelette '320 patent.

Further, the Examiner does not address at all the requirements of dependent claims 17, 29, 47, and 57 that P frames be encoded by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero. The Vancelette '320 patent cannot possibly suggest these requirements.

Accordingly, dependent claims 17, 29, 47, and 57 cannot be unpatentable over the Vancelette '320 patent.

Ground (c)

The Naimpally '825 patent discloses the replacement of stuffing packets with private data packets in order to transmit private data in the transport stream. In this arrangement, a Transport Packet is captured from the Transport Stream. If the Transport Packet includes stuffing bytes, the location and number of the stuffing bytes are determined. Based on these determinations, the stuffing bytes are replaced with private data.

As can be seen, the Naimpally '825 patent also fails to disclose or suggest MPEG encoding of frames with an on-screen display. Therefore, since the Vancelette '320 patent likewise fails to disclose or suggest MPEG encoding of frames with an on-screen display, the

combination of the Vancelette '320 patent and the Naimpally '825 patent fails to disclose or suggest the invention of independent claim 32.

Because the combination of the Vancelette '320 patent and the Naimpally '825 patent fails to disclose or suggest the invention of independent claim 32, the combination of the Vancelette '320 patent and the Naimpally '825 patent fails to disclose or suggest the inventions of dependent claims 59-61.

Accordingly, dependent claims 59-61 are not unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

Independent claim 62 requires a buffer that buffers an MPEG transport data stream containing frames of a selected program and frames of a non-selected program, an MPEG encoder that encodes frames of the selected program with an on-screen display, and a multiplexer that selectively passes the frames of the non-selected program, the encoded frames of the selected program, and original frames of the selected program.

As discussed above, neither the Vancelette '320 patent nor the Naimpally '825 patent discloses or suggests MPEG encoding of frames with an on-screen display. Therefore, the combination of the Vancelette '320 patent and the Naimpally '825 patent fails to disclose or suggest the inventions of independent claim 62.

Accordingly, independent claim 62 is not unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

Because independent claim 62 is not unpatentable over the Vancelette '320 patent in view of

the Naimpally '825 patent, dependent claims 64, 70, and 81-84 are likewise not unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

In addition, dependent claim 64 recites that the encoded frames have a time base which is slaved to the original frames.

As discussed above, the Vancelette '320 patent does not disclose or suggest an MPEG encoder that produces encoded frames having a time base which is slaved to the original frames. Similarly, the Naimpally '825 patent does not disclose or suggest an MPEG encoder that produces encoded frames having a time base which is slaved to the original frames.

Accordingly, for this reason also, dependent claim 64 is not unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

Independent claim 85 recites an MPEG encoder that encodes frames with an on-screen display and a make-up packet source that adds make-up packets to each encoded frame as necessary to ensure that each encoded frame has as many transport packets as original frames.

As discussed above, neither the Vancelette '320 patent nor the Naimpally '825 patent discloses or suggests MPEG encoding of frames with an on-screen display. Therefore, the combination of the Vancelette '320 patent and the Naimpally '825 patent fails to disclose or suggest the inventions of independent claim 85.

Accordingly, independent claim 85 is not unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

Because independent claim 85 is not unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent, dependent claims 86 and 87 are likewise not unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

Ground (d)

As discussed above, neither the Vancelette '320 patent nor the Naimpally '825 patent discloses or suggests MPEG encoding of frames with an on-screen display. Therefore, claim 74 and 75 cannot be unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

Moreover, because neither the Vancelette '320 patent nor the Naimpally '825 patent discloses or suggests MPEG encoding of frames with an on-screen display, neither the Vancelette '320 patent nor the Naimpally '825 patent discloses or suggests encoding I frames with the on-screen display as recited in dependent claim 74, or encoding subsequent P frames by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero as recited in dependent claim 75.

Indeed, the Vancelette '320 patent does not even mention I frames, P frames, or any kind of frames.

For this reason also, claims 74 and 75 cannot be unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

The Examiner asserts that, since the Examiner believes that there is an MPEG encoder disclosed in the Vancelette '320 patent that encode frames with an on-

screen display, the encoding of I and P frames would have been obvious.

However, as discussed above, the Vancelette '320 patent does not disclose an MPEG encoder which encode frames with an on-screen display. Therefore, the Examiner's conclusion cannot follow.

Accordingly, dependent claims 74 and 75 cannot be unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

Further, the Examiner does not address at all the requirements of dependent claim 75 that P frames be encoded by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero. The Vancelette '320 patent cannot possibly suggest these requirements.

Accordingly, dependent claim 75 cannot be unpatentable over the Vancelette '320 patent in view of the Naimpally '825 patent.

8. Claims Appendix

An appendix containing the rejected claims is attached.

9. Evidence Appendix

There is no submitted evidence. Therefore, there is no corresponding appendix.

10. Related Proceeding Appendix

There are no related proceedings. Therefore, there is no corresponding appendix.

11. Conclusion

For the foregoing reasons, reversal of the Final Rejection is respectfully requested.

The Commissioner is hereby authorized to charge Account No. 26 0175 the fee set forth in 37 C.F.R. §41.20(b)(2) and any additional fees which may be required, or to credit any overpayment to Account No. 26 0175.

Respectfully submitted,

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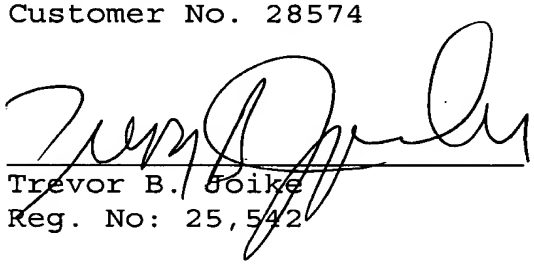
By: 
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Reg. No: 25,542

May 22, 2006

APPENDIX

1. An MPEG on-screen display coder comprising:

an on-screen display turn on device arranged to provide an output in response to an on-screen display instruction; and,

an MPEG encoder coupled to the an on-screen display turn on device and arranged to receive dynamic video frames and to process the dynamic video frames so as to encode frames with an on-screen display in response to the on-screen display instruction.

11. The MPEG on-screen display coder of claim 1 wherein the MPEG encoder processes the dynamic video frames by overlaying the on-screen display on the dynamic video frames.

16. The MPEG on-screen display coder of claim 11 wherein the MPEG encoder is arranged to encode I frames with the on-screen display.

17. The MPEG on-screen display coder of claim 16 wherein the MPEG encoder is arranged to encode subsequent P frames by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero.

28. The MPEG on-screen display coder of claim 1 wherein the MPEG encoder processes the dynamic video frames by encoding dynamic I video frames with the on-screen display.

29. The MPEG on-screen display coder of claim 28 wherein the MPEG encoder is arranged to encode subsequent P frames by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero.

32. An MPEG on-screen display coder comprising:

an MPEG encoder arranged to encode frames of a selected program with an on-screen display; and,

a multiplexer arranged to replace original frames with the encoded frames for supply to a digital television receiver.

37. The MPEG on-screen display coder of claim 32 wherein the encoded frames have a time base which is slaved to the original frames.

42. The MPEG on-screen display coder of claim 32 wherein the on-screen display is overlaid on video.

46. The MPEG on-screen display coder of claim 42 wherein the MPEG encoder is arranged to encode I frames with the on-screen display.

47. The MPEG on-screen display coder of claim 46 wherein the MPEG encoder is arranged to encode subsequent P frames by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero.

56. The MPEG on-screen display coder of claim 32 wherein the MPEG encoder is arranged to encode I frames with the on-screen display.

57. The MPEG on-screen display coder of claim 56 wherein the MPEG encoder is arranged to encode subsequent P frames by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero.

59. The MPEG on-screen display coder of claim 32 wherein the multiplexer is arranged to add make-up packets to each encoded frame as necessary to ensure that each encoded frame has as many transport packets as the original frames.

60. The MPEG on-screen display coder of claim 59 wherein the make-up packets are null packets.

61. The MPEG on-screen display coder of claim 59 wherein the make-up packets are Program Map Table packets.

62. An MPEG on-screen display coder comprising:

a buffer arranged to receive and buffer an MPEG transport data stream containing frames of a selected program and frames of a non-selected program;

an MPEG encoder arranged to encode frames of the selected program with an on-screen display; and,

a multiplexer arranged to selectively pass to a digital television receiver the frames of the non-selected program, the encoded frames of the selected program, and original frames of the selected program.

64. The MPEG on-screen display coder of claim 62 wherein the encoded frames have a time base which is slaved to the original frames of the selected program.

70. The MPEG on-screen display coder of claim 62 wherein the on-screen display is overlaid on video.

74. The MPEG on-screen display coder of claim 62 wherein the MPEG encoder is arranged to encode I frames with the on-screen display.

75. The MPEG on-screen display coder of claim 74 wherein the MPEG encoder is arranged to encode subsequent P frames by prediction based upon the encoded I frames with residuals and motion vectors set equal to zero.

81. The MPEG on-screen display coder of claim 62 wherein the multiplexer is arranged to add make-up packets to each encoded frame as necessary to ensure that each encoded frame has as many transport packets as an original frame of the selected program.

82. The MPEG on-screen display coder of claim 81 wherein the make-up packets are null packets.

83. The MPEG on-screen display coder of claim 81 wherein the make-up packets are Program Map Table packets.

84. The MPEG on-screen display coder of claim 62 wherein the buffer comprises a delay buffer arranged to delay the MPEG transport data stream by an amount of time commensurate with an amount of time required by the

MPEG encoder to encode the frames of the selected program with an on-screen display.

85. An MPEG on-screen display coder comprising:

an MPEG encoder arranged to encode frames with an on-screen display; and,

a make-up packet source arranged to add make-up packets to each encoded frame as necessary to ensure that each encoded frame has as many transport packets as original frames.

86. The MPEG on-screen display coder of claim 85 wherein the make-up packets are null packets.

87. The MPEG on-screen display coder of claim 85 wherein the make-up packets are Program Map Table packets.

88. An MPEG on-screen display coder comprising:

a demultiplexer arranged to demultiplex frames of a selected video program from frames of a non-selected program in a transport stream;

an MPEG encoder arranged to receive the frames of the selected program and to process the frames of the selected program so as to encode frames with an on-screen display; and,

a multiplexer arranged to multiplex the encoded frames with the frames of the non-selected video program in the transport stream.